

PX33

Summary Investment Analysis

Company	Telegram Open Network (TON)	Log in date	February 2018	Total \$ Raised to Date	Bootstrapped
URL	N/A	GC team	[REDACTED]	Current Burn	N/A
Industry	Crypto	Source Partners	[REDACTED]	Total Raise	\$800M
Location	Dubai and London	Stage	Private token sale	Piece	~\$10M
Employees	15 FT	Prior Investors	N/A	Ownership	N/A

COMPANY DESCRIPTION:

The Telegram Open Network (TON) is a blockchain and network project that is capable of handling millions of transactions per second, if necessary. One might think about TON as a new (and better) ethereum, or a huge distributed "supercomputer" intended to host and provide a variety of services.

TON is a combination of the following components:

- a flexible multi-chain blockchain (TON blockchain) capable of processing millions of transactions per second. It has Turing complete smart contracts, upgradable formal blockchain specifications, multi-currency value transfer, support for micropayment channels and off-chain payment networks.
- a peer to peer network (TON P2P network) used for accessing the TON blockchain, sending transaction candidates, and receiving updates about only those parts of the blockchain that the client is interested in, but also able to support arbitrary distributed services
- a distributed file storage technology (TON storage) available for storing arbitrary files, with torrent-like access technology and smart contracts used to enforce availability. This component not only enables storage services akin to a distributed Dropbox, but also paves the way for more complex decentralized apps that require storing large amounts of data, such as YouTube – or Telegram.
- a network proxy/anonymizer layer (TON Proxy) that is used to hide the identity and IP addresses of TON nodes. Similar to I2P (Invisible Internet Project), this layer can be used to create decentralized VPN services and blockchain-based TOR alternatives to achieve anonymity and protect online privacy. In conjunction with the TON P2P Network and TON DNS, the team expects that TON Proxy can make any service, including Telegram, effectively immune to censorship.
- A distributed hash table (TON DHT), used as a "torrent tracker" for TON Storage, as an "input tunnel locator" for TON Proxy, and as a service locator for TON Services.
- A platform for third-party services of any kind (TON Services) that enables smartphone-like friendly interfaces for decentralized apps and smart contracts, as well as a World Wide Web-like decentralized browsing experience.
- a service for assigning human-readable names (TON DNS) to accounts, smart contracts, services, and network nodes. With TON DNS, accessing decentralized services can be similar to viewing a website on the World Wide Web.
- a platform for micropayments (TON Payment) and a micropayment channel network. It can be used for instant off chain value transfers between users, bots, and other services. Safeguards built into the system are meant to ensure that these transfers are as secure as onchain

INVESTMENT RATIONALE:Why invest now?

- Blockchain technology is a fundamental innovation that is very disruptive.
- Bitcoin proved the digital gold use case, but has struggled to prove useful otherwise. Ethereum has emerged as the platform of choice for blockchain developers to build crypto-products/services on top of, but is massively inefficient and is still an immature platform. Both Bitcoin and Ethereum have emerged as quite valuable ecosystems as evidenced by their respective market caps (Bitcoin: ~\$140Bn, Ethereum: ~\$80Bn).
- Telegram is where the conversation happens for all things crypto; according to Token Market, >80% of all blockchain-based projects have an active Telegram group. Telegram is the de facto community where new and existing projects get marketed, receive feedback and gain influence.
- Telegram's founder and team (see below for more info) have proven to be repeat heavy hitters building products and services that hundreds of millions of people are using in a short period of time.
- TON could emerge and be at least as valuable as Ethereum given that, by design, it will be a much more efficient and scalable blockchain platform.
- In the bull case, TON could be the AWS (products and services to be built on top of it) + WeChat (all the consumer facing products that are widely used and use the same distribution + currency) of the new blockchain world that is emerging.
- This is the team and audacious project to back in a private token sale as they will be quite successful attracting capital (several times oversubscribed).
- [REDACTED] will be purchasing Grams at US\$0.37756101. At the ICO in March 2018, the price will jump to US\$1.45 per Gram. Therefore, [REDACTED] will be purchasing Grams at a significant discount to the ICO price. We will be able to sell 1/4 of our Grams 3 months post launch and will be able to sell all of them 18 months post-launch.
- Over time, we believe TON can appreciate significantly in value. TON is not just a blockchain - it is a scalable platform that will allow users to safely hold cryptocurrency (custody), protect their identity, and maintain control of their own data. It will also become a platform for developers, wherein they can create and distribute applications and / or services. TON has an opportunity to become a worldwide WeChat + AWS with enhanced features and capabilities.
- We believe this investment could return 10x. As a comparison, in January of 2017, Ethereum's market cap was ~\$700M. Due to the network effects of the ERC20 token, and the ICO market's \$4Bn total capital raised in 2017, Ethereum's market cap had appreciated to \$80Bn (114x return) by the end of the year. TON's proposal entails being a much better Ethereum / Bitcoin with significant network effects.

transactions.

Market approach

TON's initial go to market will be through the Telegram Messenger ecosystem. Telegram Messenger can serve as an example of the unique possibilities offered by integrating with TON, while also adding features to the TON platform, leveraging Telegram's user base and developed ecosystem. Notably, through Telegram, TON will be able to offer two essential components:

- a) **Custody:** The TON architecture supports light clients that can run on mobile devices without consuming significant resources. TON light wallets will be built into Telegram applications, allowing millions of users to store their funds securely in the TON blockchain. The wallet owners will be the sole holders of the corresponding encryption keys. Telegram mobile and desktop applications with integrated wallets will also double as TON clients, enabling secure transfers of value within the TON blockchain and interaction with TON smart contracts and applications. Telegram will offer streamlined interfaces for sending value to contacts and paying for purchases in TON. The TON coins exchanged by Telegram users will be called «Grams». The Gram will serve as the principal currency for the in-app economy on Telegram and will be available for external use.
- b) **Secure ID (KYC / AML):** According to Tokenmarket, 84 percent of blockchain-based projects have an active Telegram community, more than all other chat applications combined. Because the majority of actors in the new digital economy already have active Telegram accounts, Telegram has the unique opportunity to offer a secure universal ID. After passing KYC-AML on Telegram once, users will get a virtual passport to log into services that require user verification, thereby eliminating a major point of friction for anyone engaging with crypto-assets. All private data (such as passport scans) will eventually be stored end-to-end encrypted with a key known only to the owners. Telegram's distributed servers (and later the TON Blockchain) will not have access to this information, but will instead store a hash of the value to be able to confirm that the data was verified when the user obtained their secure ID. Third parties will be able to add further verifications to these virtual passports.

Telegram's existing ecosystem will also be able to offer simple ways of buying the TON coins, and a range of services to spend them on.

First, the bot platform. As of October 2017, more than 800K unique third-party bots are regularly used by 52 million Telegram users. These bots can already accept credit card payments from users in 200 countries via eight providers connected to the Telegram Payments Platform. In the future, by using their verified IDs in conjunction with bots that accept credit cards, Telegram users will be able to buy and exchange cryptocurrencies in a frictionless and legally compliant way. Telegram will provide a unified entry point for users willing to connect with bots that offer exchange services, effectively creating a competitive market.

Second, groups and channels. The Telegram ecosystem includes millions of public group chats reaching up to 30,000 members and broadcast channels, the largest of which have several million subscribers. Telegram's public broadcast channels generate over 30 billion views by 80 million users each month. Creators of large channels currently try to monetize them by posting advertisements or promoting other channels and groups. However, they presently lack the necessary tools to formalize their transactions with advertisers. To fix this, Telegram will launch a TON-based ad exchange where parties interested in promoting their projects can connect with the relevant channel owners and negotiate a price in a transparent and fully automated way. All accompanying transactions will be made in Grams on a per-view or per-click basis, with the necessary statistics and guarantees provided to all parties.

The Telegram Advantage

The Telegram Messenger ecosystem provides a significant go to market advantage for TON (see market approach section for more). In 2017, Telegram reached 150M monthly active users, up from just 25M in 2014. Many of these members are embedded within the crypto ecosystem. The Telegram team projects Telegram's MAUs will grow to >1Bn by 2022. The advertising opportunity is also significant, as Telegram's public broadcast channels generate over 30 billion views by 80 million users each month.

Team

The TON team is made up of 15 impressive developers. The founders are:

- Dr. Nikolai Durov, who holds PhDs from Bonn University and Saint-Petersburg State University. Currently the co-founder, CTO, architect, Lead C / C++ Engineer at Telegram. Started coding at age 9, and by the age of 13, he had built a full-fledged operating system for Intel 80386 microprocessors in x86 assembly language.
- Pavel Durov: currently the co-founder, CEO, and product manager of Telegram. First gained international recognition for founding VK, which under his leadership reached 70 percent market share in Russia, Ukraine and Belorussia, eclipsing Facebook and other competing social networks. An outspoken libertarian, he published free market manifestos urging the Russian government to deregulate and decentralize the country's economy. Pavel was forced to sell VK and leave Russia in 2014 after a clash with the government over his users' privacy and freedom of speech. Pavel started coding at 10, and at 11 he already created his first multiplayer strategy game. At 21 he single-handedly coded the first version of VK. Pavel founded Telegram and became interested in cryptocurrencies in 2013, when he spent \$1.5 million of his savings on Bitcoin.

Third, content creation and digital goods. Bots, channels, and groups provide a ready market for paid content and subscription services. Users will be able to support publishers and content creators by making donations or paying for exclusive access. Bots can act as virtual storefronts and accept orders for the delivery of physical goods. Telegram's in-app economy will supply the TON market with a wide range of goods and services that can be obtained with TON coins.

Fourth, an app store for decentralized applications. Telegram will offer a searchable registry of decentralized services from its applications, providing a list of the most popular apps, as well as recommendations based on the user's history of choices. These steps can make Telegram a gateway to blockchain-based projects for the masses — similar to how Google Play and the App Store currently work for centralized applications.

In addition to the above, TON coins will be used for several other services, including: commission paid to TON nodes, stakes deposited by validators, voting power for changes to the protocol, payment for hiding identity and IP addresses, and payment for bypassing censorship imposed by local ISPs.

Roadmap

The product roadmap for TON is as follows:

- Q12018: token sale launch, and launch of Telegram external secure ID
- Q22018: launch of minimal viable test network of TON
- Q32018: testing and security audits of TON
- Q42018: deployment of the stable version of TON and telegram wallet launch
- Q12019: creation of a TON-based economy in Telegram
- Q22019: launch of TON services, TON storage, and TON proxy

Governance

Please see 'Deal Setup and Next Steps' section for a description of the token distribution. The founders of Telegram will be responsible for the proceeds raised and any sale of tokens from the token reserve. Over time (specific timeline not defined), these responsibilities will be transferred to the TON Foundation, a not-for-profit organization. In 2021, TON will let go of the Telegram element in its name and become The Open Network.

INVESTMENT RISKS:

TON Buildout and Implementation : [High Risk] Given the TON blockchain is new, it may include coding errors or not function as intended. Moreover, the world of crypto is constantly changing; advances in cryptography, or technical advances such as the development of quantum computing, could present risks to Grams by rendering ineffective the cryptographic consensus mechanism that will underpin the TON Blockchain. Upgrades to the TON Blockchain after it launches, a hard fork in the TON Blockchain or a change in how transactions are confirmed on the TON Blockchain may have unintended adverse effects on Grams. In addition, any required parameter changes needed to correct coding errors or unintended functionalities of the TON Blockchain may fail to garner the votes by validators and holders of Grams necessary to implement such parameter changes. As a result, any such coding errors or unintended functionalities in the TON Blockchain may remain unresolved.

Regulatory Uncertainty: [Medium Risk] TON is registering as a utility token. It is difficult to predict how or whether governmental authorities will regulate Grams in the future. It is likewise difficult to predict how or whether any governmental authority may make changes to existing laws, regulations and/or rules that will affect cryptographic tokens, digital assets, blockchain technology and its applications. Such changes could negatively affect Grams in various

DEAL SETUP AND NEXT STEPS:

Allocation

██████████ will be purchasing \$10M worth of Grams at US\$0.37756101. At the ICO in March 2018, the price will be US\$1.45 per Gram. ██████████ will be able to sell 1/4 of its Grams holdings 3 months post launch and will be able to sell all of them 18 months post-launch.

Token Distribution

The total supply of native TON tokens will be 5 billion. After the TON blockchain is fully deployed, the annual inflation rate is projected at two percent. This inflation represents a payment made by all members of the community to the validators for keeping the system functional.

Ten percent of the supply will be reserved to be used as incentives for the ecosystem — to encourage installation of third-party validators and TON Storage and TON Proxy nodes, and to reward users for activating wallets and passing KYC/AML. Two hundred million grams (4%) will be reserved for the development team with a 4-year vesting period (see chart below).

During the initial stage of active TON development, at least 42 percent of the entire supply will be retained by the TON Reserve to prevent speculative trading and to maintain flexibility at the early

ways, including, for example, through a determination that Grams are regulated financial instruments that require registration or through the imposition of onerous liquidity requirements.

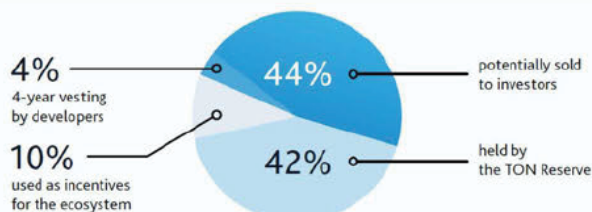
Competition: [Medium Risk] The crypto ecosystem is constantly evolving and several reputable blockchain protocols are being built. It's possible that the TON Blockchain could be supplanted by competing protocols that improve upon, or fully replace, the TON Blockchain's technology. If the TON Blockchain is surpassed or superseded, Gram usage and adoption may decline. The TON Blockchain's technology will be available as open-source, meaning that anyone can copy and disseminate the TON Blockchain source code either in the same form or with modifications as a "fork."

Lack of Network Effect: [Medium Risk] It is possible that the intended network effects described in previous sections will not pan out. Although Telegram intends to integrate the TON Blockchain with Telegram Messenger as, Telegram may be unable to achieve the intended technical integration between the TON Blockchain and Telegram Messenger. This could negatively impact the value of Grams.

Use of Funds: [Medium Risk] While the "use of funds" are laid out by the Telegram team, there is no restriction on Telegram's use of the funds generated from the token sale or on Telegram's ability to transfer those funds to, or make payments for the benefit of, its affiliates. Hence, there is no guarantee that [REDACTED] would get its money back in the event of a Termination.

TON Foundation: [Low Risk] As seen with the recent volatility around Tezos and the Tezos Foundation, it is not guaranteed that the Foundation mechanism will work. In TON's case, there is no timetable for the establishment of the TON Foundation or the transfer of the responsibilities related to TON and the TON Reserve to the TON Foundation, and it is possible that the TON Foundation may never be established or that the responsibilities and/or assets transferred to the TON Foundation may differ from current expectations.

stages of the evolution of the system. The remaining 44 percent (2.2 billion Grams) will be sold with tiered pricing; The price of the first token to be sold will be approximately 0.1 USD, with each successive token priced one billionth higher than the previous one.



MANAGEMENT BIOS:

Dr. Nikolai Durov (Co-Founder): PhD (Bonn University), PhD (Saint-Petersburg State University); 2013-present: Co-founder, CTO, Architect, Lead C/C++ Engineer at Telegram. Built MTProto and Telegram's distributed data storage engines; 2006-2013: Co-founder, CTO, Architect, Lead C/C++ Engineer at VK. Built data storage and networking software;

Awards: Absolute World Champion in Programming (2000, 2001) – one of ten people in history to win the ACM International Collegiate Programming Contest twice; Gold Medals in International Mathematical Olympiads (1996, 1997, 1998); Gold and Silver Medals in International Olympiads in Informatics (1995, 1996, 1997, 1998)

Pavel Durov (Co-Founder): 2013-present: Co-founder, CEO, Product Manager at Telegram; 2006-2013: Co-founder, CEO, Product Manager, Lead Developer at VK;

Awards: The most promising Northern European leader under 30 (2014)¹³, Young Global Leader by the World Economic Forum (2017)¹⁴

BUSINESS EVALUATION (1-5)

1. TEAM:	5	Dr. Nikolai and Pavel have built a team of world-class technical developers that have won various mathematical and programming competitions. They have also seen proven success with the scaling of the Telegram app to over 175M MAUs.
2. MARKET POTENTIAL:	5	Crypto has been growing quickly and has the potential to change technology. In particular, the recent appreciation in crypto assets has garnered larger awareness and interest in the ecosystem.
3. PRODUCT:	3	This is a product that has the potential to become the WeChat + AWS of the blockchain world. However, it is extremely new and will require patience to see if it works.
4. COMPETITION:	3	While this is one of the only projects building a full stack protocol (scalability, custody, etc.), there are many teams building blockchain protocols and perhaps new innovations coming in the future. That said, we believe the Telegram ecosystem and go to market provides a significant advantage.
5. BUSINESS MODEL:	4	If the protocol works, Grams should see a significant appreciation in value and the network will grow from there. Some uncertainty lies around the implementation of the Foundation.
6. TIMING:	5	It is still early in crypto and TON is the first blockchain of its kind. There seems to be a turning point occurring in terms of interest and awareness of the space. It is also relevant in light of the large amounts of data being held by large tech companies.

PROCESS EVALUATION (1-5)

1. VALUATION:	2	Valuation is high, although this project was oversubscribed given the impressive team, large opportunity, and huge potential for upside.
2. DEAL COMPETITION:	4	GC was able to get its desired allocation.